REMARKS

Claims 1-8 are all the claims pending in the application. Claim 8 has been added to further define the invention. Reconsideration and allowance of all the claims are respectfully requested in view of the following remarks.

Claim Rejections - 35 U.S.C. § 103

The Examiner rejected claims 1-7 under §103(a) as being unpatentable over US Patent 6,315,456 to Tanimoto et al. (hereinafter Tanimoto). Applicants respectfully traverse this rejection because Tanimoto fails to teach or suggest every element as set forth in Applicants' claims.

Claim 1 sets forth, *inter alia*, a rolling bearing comprising a retainer rotatably holding rolling elements wherein the retainer is made of a resin composition having a flexural modulus of at least 3,500 MPa at 180°C and a heat-resistant temperature of at least 150°C.

By structuring the retainer as set forth in claim 1, the retainer can be used without any deformation at high temperatures and fairly assembled to bearing and, thus, can be used under severe working conditions such as high temperature, high rotary speed, and high load over an extended period of time.[1] Further, because the resin composition has a flexural modulus of at least 3,500 MPa at 180°C and a heat resistant-temperature of at least 150°C, it thus exhibits an excellent heat resistance and oil resistance as well as good mechanical properties. This material has a proper flexibility and hence a snap-fit property required for a retainer. The resulting retainer can be fairly assembled to bearing.[2]

In contrast to that set forth in claim 1, Tanimoto teaches a retainer made of thermoplastic resin, particles of a heat-resisting resin, and reinforcing fibers.[3] Tanimoto describes that it is the heat-resisting resin and reinforcing fibers that give his retainer the ability to withstand use at a

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[1] Specification at page 4, lines 6-14, for example.

[2] Specification at page 5, lines 7-19, for example.

[3] Tanimoto at col. 1, line 58 - col. 2, line 17.

relatively high temperature, whereas it is the thermoplastic resin which allows the retainer to be made by injection molding, i.e., the thermoplastic resin gives the retainer flexibility.[4] However, as seen from Tanimoto's claims 1 and 2, as well as claims 15 and 21, the reinforcing fibers are not always necessary. See, also, the Abstract. Accordingly, it appears that it is the heat-resisting resin that is mostly responsible for the high-temperature properties, including flexural modulus. In Table 1, Tanimoto gives the properties for one heat-resisting resin, Celazole TF-60C (an example of PBI), as used in his invention. As can be seen from Tanimoto's Table 1, the flexural modulus of Tanimoto's heat resisting resin is 3,040 MPa at 288°C (wherein to convert from kg/cm^2 to MPa, divide the number in Kg/cm^2 by 10.197), and is 19,907 MPa at 23°C. But Tanimoto does not give any value for 180°C, and the flexural modulus does not vary linearly with temperature. Further, the flexural modulus of Tanimoto's retainer will be less than that of the heat-resisting resin because the heat resisting resin is only one component of the retainer's resin, and the other component—the thermoplastic resin—has a lower flexural modulus at higher temperatures. Accordingly, contrary to the Examiner's assertion that Tanimoto is silent as to the properties of the resin composition, the teachings of Tanimoto actually suggest that his retainer will not have a flexural modulus of 3,500 MPa at 180°C. Accordingly, Tanimoto fails to teach or suggest a retainer made of resin composition having a flexural modulus of at least 3,500 MPa at 180°C, as set forth in claim 1.

The Examiner asserts that it would have been obvious to make Tanimoto's retainer out of a resin having the claimed properties because it would have been a matter of obvious design choice to select a known material on the basis of its suitability for the intended use.[5] But Tanimoto's intended use is not the same as that of the presently claimed invention. Tanimoto's intended use is a bearing that can be used in a situation involving a high speed of rotation at a high temperature, wherein Tanimoto defines a high speed as not lower than 100,000 rpm and a temperature as high as 200°C to 300°C.[6] On the other hand, the high rotary speed in the present

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[4] Tanimoto at col. 2, lines 7-19.

[5] Office Action at page 2, item 2, 3rd paragraph, lines 1-4.

[6] Tanimoto at: col. 6, lines 9-15; col. 4, lines 16-22; and col. 1, lines 51-57, for example.

specification is set forth as being around 20,000 rpm, and the high-temperature is set forth as being about 150°C to about 200°C.[7] Further, Tanimoto discloses a retainer made of a heat-resisting resin, wherein reinforcing fibers are optional, whereas the retainer described in the specification does not include any heat-resisting resin but, instead, includes reinforcing fibers. Accordingly, the resins suitable for Tanimoto, and those suitable for the presently claimed invention, would not be the same. Therefore, one of ordinary skill in the art—looking at the teachings of the reference as a whole—would not have found the retainer as set forth in Applicants' claim 1.

Further, the Examiner asserts that "it would be inherent for the claimed materials having the specified glass or carbon composition to have the properties as described in Claim 1."[8] Applicants agree that their resin compositions as set forth in dependent claims 2-6 inherently include the properties as described in claim 1. However, the properties as set forth in claim 1 are not inherently within the resin compositions as disclosed in Tanimoto. That is, as noted above, Tanimoto's retainer includes a thermoplastic resin and particles of a heat-resisting resin, wherein reinforcing fibers are optional. On the other hand, the retainer of the present invention achieves the properties as set forth in claim 1 through a composition of thermoplastic resin and reinforcing fibers. Accordingly, the properties inherent in Tanimoto's retainer are different than those in the retainer of the presently claimed invention. And Tanimoto's retainer does not necessarily have—as is required to support the assertion of inherency—the properties as set forth in claim 1.

For at least any of the above reasons claim 1 is not rendered obvious by Tanimoto. Likewise, dependent claims 2-7 are not rendered obvious by this reference. However, Applicants respectfully traverse this rejection as it applies to claims 2 and 3 for the following additional reasons.

Claims 2 and 3 set forth that the resin composition is polyamide 46 (PA46).

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[7] Specification at: page 2, line 24 - page 3, line 13; page 4, lines 6-14; page 7, line 22 - page 8, line 1; paragraph bridging pages 17 and 18; page 20, 2nd paragraph; page 22, 1st paragraph; page 23, lines 5-10; page 26, and lines 14-20.

[8] Office Action at page 2, item 2, 3rd paragraph, lines 4-6.

The Examiner asserts that Tanimoto teaches a synthetic resin of polyamide 46.[9] But the Examiner's interpretation of Tanimoto is mistaken. Contrary to the Examiner's assertion, Tanimoto teaches the use of polyamide-imide (PAI), not the use of polyamide (PA).[10] As noted in the present specification, PAI is disadvantageous in that it leaves something to be desired in flexibility necessary for a retainer, making it difficult for the resulting retainer to be assembled into a bearing.[11] Accordingly, although the specification teaches that the use of PA is acceptable, it teaches that PAI is not the same as PA. And it is PAI that is specifically taught by Tanimoto.

Further, for the sake of argument, even assuming that Tanimoto taught the use of PA, such would still not be sufficient to render obvious Applicants' claims 2 and 3. That is, while the use of PA46 is acceptable, the specification teaches that at least one material based on PA66 is not. See Comparative Example 3 as set forth in Table 2. That is, not all PA is the same.

In light of the above, Tanimoto's teaching of PAI is insufficient to render obvious Applicants' claims 2 and 3 that set forth a resin of PA46.

Conclusion

Claim 8 has been added to further define the invention. Claim 8 sets forth that the retainer does not include a heat resisting resin as a component thereof. That is, Applicants are able to achieve a retainer having a flexural modulus of 3,500 MPa at 180°C, and a heat-resisting temperature of at least 150°C, without the use of heat-resisting resin *per se*. In contrast, Tanimoto teaches that the use of a heat-resisting resin is essential. Note, for example, Tanimoto at: abstract; col. 1, lines 58-62, claims 1 and 15.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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[9] Office Action at page 2, item 2, 2nd paragraph, lines 3-4.

[10] Tanimoto at: col. 1, line 66 - col. 2, line 5; col. 3, lines 35-40; as well as claims 1 and 15, for example.

[11] Specification at page 3, line 17 - page 4, line 3.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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